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## A ROUND-HEADED SILVER PERCH, *BAIRDIELLA CHRYSURA*; WITH NOTES ON THE EARLIEST FIGURED ROUND-HEADED FISH

BY E. W. GUDGER

There is in the collections of the American Museum a young round-headed specimen of *Bairdiella chrysura* without any data as to its source. My attention was called to it by my colleague, Mr. J. T. Nichols, who identified and catalogued it. Since I have in recent years described a number of pug-headed fishes, and since this is a very closely allied deformity, I will now briefly describe this specimen also. To this account will be added the figure of and a brief note on the earliest recorded case of this deformity in fishes.

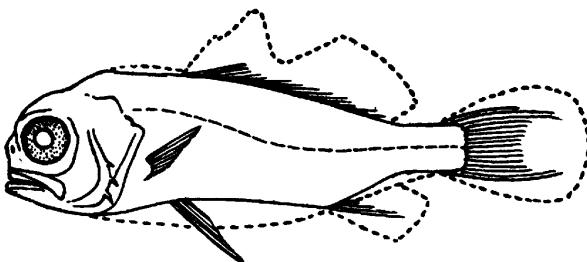


Fig. 1. Lateral view of the little round-headed *Bairdiella chrysura* in the collections of the American Museum. The figure shows the fish in natural size—67 mm. over all.

Our specimen of *Bairdiella chrysura* has been in strong alcohol for years, is somewhat contracted and distorted in the abdominal parts, and is as hard as leather. However, the head has been little affected by this. Figure 1, drawn life size, shows the shrunken abdomen and the frayed fins. The head-parts have been drawn with great care and the figure shows them exactly as I see them in the specimen before me. For comparison's sake a normal young specimen of the silver perch of about the same stage of development as the deformed fish has also been drawn (Fig. 2 herein).

Now the body of the fish in Fig. 1 is little changed in length between any fixed points, excluding the snout. So taking as a standard

length the distance between the hinder point of the operculum and the end of the tail (the beginning of the caudal fin), the drawing reproduced in Fig. 2 has been reduced to the same length (38 mm.), between the same points, the head and tail being reduced in the same degree. Since the little fish in Fig. 2 is normal in every way, we can use its head as a standard of comparison for that of the teratological fish and can readily see how much deformation this has undergone.

This abnormal fish, measured from the anterior point of the rounded head to the dorsal tip of the frayed caudal fin, is 67 mm. long. The unbroken tail as shown in the dotted line would have added about 3 mm. more, making the "over-all" length as it is drawn about 70 mm. However, had the snout been normal it would have added probably not more than 5 mm. to the total length. The over-all length of this specimen, if normal, would probably be about 75 mm. The depth in the shoulder

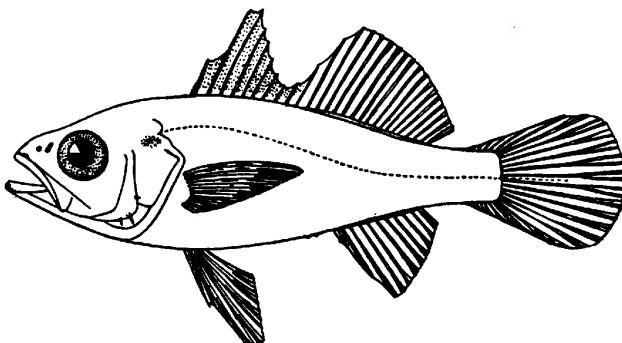


Fig. 2. Lateral aspect of a normal silver perch of about the same stage of development as the fish shown in Fig. 1. For comparison of head-parts, this drawing is reduced to the same length (operculum to base of caudal—38 mm.) as Fig. 1 between the same points. The head and the caudal fin are of course reduced proportionally.

After Hildebrand and Schroeder, 1928.

region is 18 mm., and this is probably fairly close to the normal depth in this deformed fish.

In pug-headed fishes the whole anterior part of the head including the upper jaw is shortened and the forehead of the fish falls abruptly off into the floor of the mouth, but the lower jaw remains intact—projecting in front like an old-fashioned Ames-made shovel. That this may be clear to the reader, a figure of a pug-headed brown trout (*Salmo fario*) is reproduced from a previous paper of mine. This fish, seen in lateral view in Fig. 3, should be compared with those shown in Figs. 1 and 2.

Figures 3 and 2 then emphasize very strongly what has taken place in the little silver perch. Not only has the anterior part of the head

failed to develop, but the lower jaw has likewise failed in exactly the same degree. The lower jaw is slightly longer than the upper—a mere fraction of a millimeter—but so it is in the normal young fish shown in Fig. 2, and also in the adult fish. In brief, the shortening of the head has taken place equally in both jaws, producing that deformity in fishes known as round-headedness.

Along with the shortening of the snout has come a marked humping up in the region over the eye and over the operculum. The shortening of the snout has brought the steep forehead close to the eye and has apparently reduced the nasal openings to one. Compare here the normal fish with the deformed one.

As to the causes of this deformity, one cannot speak with too much confidence. In the round-head as in the pug-head, it is clear that the

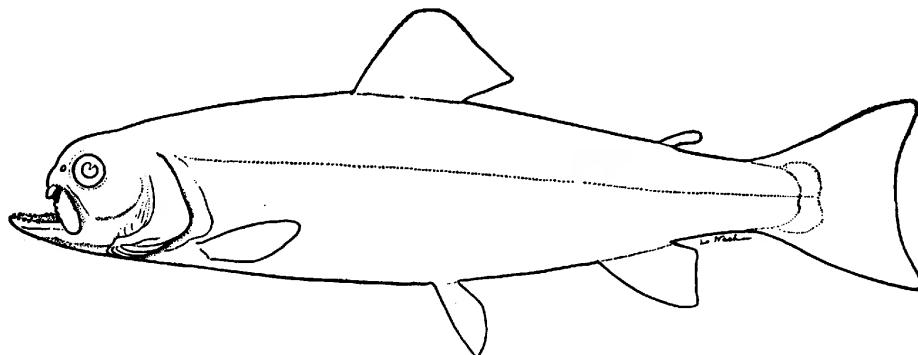


Fig. 3. A pug-headed brown trout (*Salmo fario*) drawn to show the steep forehead and the fully developed projecting lower jaw.

After Gudger, 1929.

basal bone of the skull, the parasphenoid, has failed to develop and the anterior part of the skull has failed to elongate. As a result of this developmental failure all the bones forming the anterior part of the skull have become tied down in front giving the snub-nosed appearance seen in Fig. 1.

In some pug-heads the parasphenoid buckles up into the space between the eyes causing these to bulge noticeably. This I found in a pug-headed sea-bass (*Roccus lineatus*) which I described some years ago. No exophthalmia is found in the silver perch under consideration.

For the shortening of the lower jaw, I have no particular explanation to offer. It has simply failed to develop along with the other parts of the head. However, for the whole head it may be said that it has remained in the embryonic condition. This explanation is offered because

it is well known that all embryonic fishes are round-headed. Hildebrand and Schroeder's figure (not reproduced herein) of an 11-mm. specimen of *Bairdiella chrysura* shows this very distinctly. The body and hinder two-thirds of the head of the teratological little silver perch developed, but the anterior part of its head never did—it remained in the embryonic condition. As to the cause of this retarded development, one can only conjecture that it was due to a failure in the hormonic balance. It is known that such achondroplastic disturbances (possibly a failure of the pituitary) in dogs bring about pug-headedness. Presumably the same thing holds for fishes.

Since this is presumably the latest round-head fish on record (March, 1933), it may be of interest to reproduce the earliest known figure of such a deformity and briefly to describe it.

This oldest account is found in Conrad Gesner's 'Liber IIII'

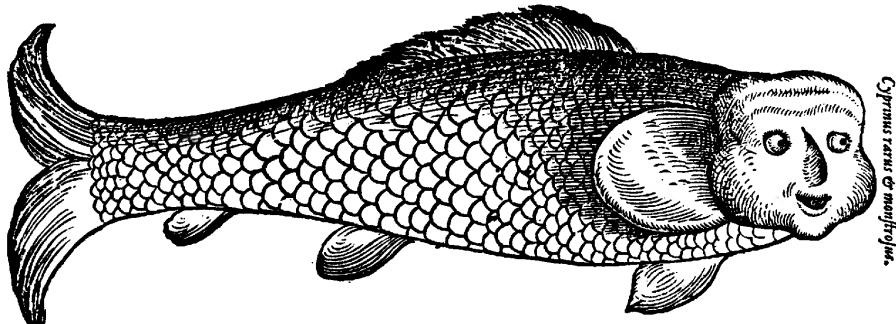


Fig. 4. Gesner's round-headed carp, the earliest published figure, in which the artist's imagination had free play.

After Conrad Gesner, 1558.

('De Piscium & Aquatilium Animantium Natura') of his encyclopedic 'Historia Animalium' (Tiguri, 1558). Gesner had seen Rondelet's figure of a pug-headed carp (1555—the first figure of such a fish ever published) and had data for four carp with abnormal heads; he had drawings of two of these fish, and had two specimens of these deformed fish, or their dried skins, which had been sent to him. Whether his specimens were pug-heads or round-heads cannot be said from his text. But his figure (No. 4 herein) would indicate that it was drawn from a round-headed specimen. Rondelet's figure is a well-drawn and scientifically valuable representation of a pug-headed carp. Gesner's drawing—in the making of which his artist took great liberties—is of interest from a historical and antiquarian standpoint only. It is apparently the first drawing ever attempted of a round-headed fish.

Few other round-headed fish have been figured and described. So far as known to me, these comprise: one other carp, a bream, a mullet, and three gadoids. I have photographs of such a round-headed codfish and of a pollack which I hope later to publish with descriptions. Apparently this deformity is more often found in the Gadidae than in fishes of any other family.

